

## AMENDMENTS TO THE CLAIMS

1. (Cancelled)
2. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein said hydrogen-fueled locomotion subsystem comprises~~ comprising:  
\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem comprising a fuel cell and an electrical motor powered thereby; and  
\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:  
\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and  
\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor.
3. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and also comprising:~~  
\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem;  
\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:  
\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and  
\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor; and  
\_\_\_\_\_ a water recycler operative to supply water produced by said at least one locomotion subsystem to said at least one refuelable hydrogen generator.
4. (Cancelled)

5. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and also~~ comprising:

at least one hydrogen-fueled locomotion subsystem;

at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor; and

an operator controlled hydrogen-fuel generation controller which is operative in response to an input from a vehicle operator for determining the quantity of hydrogen generated by said at least one refuelable hydrogen generator at a given time.

6. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein said hydrogen generator comprises~~ comprising:

at least one hydrogen-fueled locomotion subsystem; and

at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand;

a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor; and

at least one hydrophobic cathode comprising at least one of a polytetrafluoroethylene ~~Teflon~~ coating, layer and binder.

7. (Original) A hydrogen-fueled motor vehicle according to claim 6 and wherein said cathode is operative as a hydrogen-generating and as a hydrogen-consuming electrode.

8. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein comprising:~~

at least one hydrogen-fueled locomotion subsystem; and  
at least two refuelable hydrogen generators operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, each of said at least two refuelable hydrogen generators comprising:  
at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and  
a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor, said refueling subsystem being is operative to recharge at least a first one of said at least two refuelable hydrogen generators while at least a second one other of said at least two refuelable hydrogen generators is operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem.

9. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein comprising:~~

at least one hydrogen-fueled locomotion subsystem; and  
at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:  
at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and  
a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor, said electrical power being is provided by solar cells.

10. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein comprising:~~

at least one hydrogen-fueled locomotion subsystem; and  
at least one refuelable hydrogen generator operative to supply hydrogen

fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor, said electrical power ~~being~~ is provided by regenerative braking.

11. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

\_\_\_\_\_ at least two electrochemical reactors operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to at least a first one of said at least two electrochemical reactors, said electrical power ~~being~~ is provided to ~~said at least first one of~~ said at least two electrochemical reactors while at least a second one ~~another~~ of said at least two electrochemical reactors is generating hydrogen.

12-13. (Cancelled)

14. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 13 and wherein said at least one anode comprises~~ comprising:

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand;

\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor; and

\_\_\_\_\_ at least one anode, said at least one anode being replaceable and comprising at least one of powder, granules and coated particles.

15. (Cancelled)

16. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 15 and wherein comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor,

\_\_\_\_\_ said at least one electrochemical reactor comprising a slowly consumable anode and a quickly consumable electrolyte,

\_\_\_\_\_ said slowly consumable ~~consumed~~ anode comprising ~~comprises~~ at least one of aluminum and aluminum alloy and ~~wherein~~ said electrolyte comprising ~~comprises~~ at least one of an alkaline electrolyte based on potassium hydroxide solution and a halide electrolyte based on aluminum chloride solution.

17. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein said hydrogen-fueled locomotion system comprises comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem comprising at least one electric motor and at least one fuel cell that ~~provides~~ ~~provided~~ electric power to said at least one electric motor; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen

fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electric power to said at least one electrochemical reactor.

18. (Cancelled)

19. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein~~ comprising:

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

\_\_\_\_\_ at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor.

\_\_\_\_\_ said at least one electrochemical reactor ~~comprising~~ comprises a water-based fuel comprising:

at least one of:

a salt selected from a group comprising at least one of halides, trihalides, acetates, sulfates, nitrates, borates, acid salts, chromate, stannate, perchlorate and basic salts of Group I metals, ammonium, Group II metals and Group III metals;

a base; and

an acid;

at least one of zinc, iron, aluminum, magnesium, tin, calcium, lithium, sodium, metal hydrides based on nickel, titanium, rare earth metals, and alloys thereof; and

a catalyst based on at least one of a metal and metal oxide belonging to at least one of the platinum metal group and the transition metal group.

20. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 19 and wherein said catalyst is formed as a coating on at least one rod, said at least one rod is being selectibly introduceable into said water-based fuel.

21. (Original) A hydrogen-fueled motor vehicle according to claim 19 and wherein said water-based fuel comprises zinc and the catalyst comprises an impurity in the zinc, said impurity is a transition metal.

22. (Original) A hydrogen-fueled motor vehicle according to claim 19 and wherein said water-based fuel comprises iron and said catalyst comprises an impurity in the iron, said impurity is a transition metal, which is not iron.

23. (Original) A hydrogen-fueled motor vehicle according to claim 19 and wherein said water-based fuel comprises a hydroxide of at least one of potassium, sodium lithium and their mixtures in solution in water.

24. (Original) A hydrogen-fueled motor vehicle according to claim 19 and wherein said acid comprises at least one of an inorganic acid and an organic acid.

25. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 19 and wherein said at least one of zinc, iron, aluminum, magnesium, tin, calcium, lithium, sodium, metal hydrides based on at least one of nickel, titanium, rare earth metals as well as alloys thereof is disposed in said water based fuel as at least one of powder, granules and coated particles.

26. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein~~ comprising:

at least one hydrogen-fueled locomotion subsystem; and  
at least one refuelable hydrogen generator operative to supply hydrogen

fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor,

said at least one electrochemical reactor ~~comprises~~ comprising:

a container containing at least one anode, at least one cathode, an electrolyte and a porous separator sheet separating between said at least one anode and said at least one cathode; and

a resistance providing element connected between said at least one anode and said at least one cathode and being operative to control the rate of production of hydrogen by said at least one electrochemical reactor.

27. (Original) A hydrogen-fueled motor vehicle according to claim 26 and wherein said resistance providing element is a pulse width modulator.

28. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 26 and wherein said at least one electrochemical reactor is controlled by controlling the level of the electrolyte in the container.

29. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 26 and wherein said at least one anode comprises at least one of zinc, iron and tin in at least one of sheet and plate forms.

30. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 26 and wherein said at least one anode comprises at least one of cadmium and lead.

31. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 26 and wherein said at least one anode comprises at least one of zinc, iron, lead, cadmium and tin provided in the form of at least one of pressed powder and paste pressed on an



electrically conducting flat support.

32. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 26 and wherein said at least one cathode comprises at least one of an electrically conducting plate and an electrically conducting mesh supporting a catalyst for hydrogen production, said catalyst comprising at least one of material based on the platinum metal group and the transition metal group.

33. (Original) A hydrogen-fueled motor vehicle according to claim 26 and wherein said electrolyte comprises at least one of salts, acids and bases in the form of at least one of absorbed and gel.

34. (Original) A hydrogen-fueled motor vehicle according to claim 33 and wherein said base comprises at least one of hydroxides of potassium, sodium, lithium and their mixtures in solution in water.

35. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 33 and wherein said acid comprises at least one of an inorganic acid and an organic acid ~~such in aqueous solution.~~

36. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 1 and wherein~~ comprising:

at least one hydrogen-fueled locomotion subsystem; and

at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising:

at least one electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

a refueling subsystem providing at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said at least one electrochemical reactor.

said at least one electrochemical reactor comprising ~~comprises~~ a container containing at least one anode, at least one cathode, an electrolyte, and water based fuel;

~~wherein~~ said at least one anode comprising ~~comprises~~ an electrical conductor and being is-in direct electrical contact with said water based fuel; and

~~wherein~~ said at least one cathode comprising ~~comprises~~ an electrical conductor and being is-coated with a catalyst based on at least one of a metal and metal oxide belonging to at least one of the platinum metal group and the transition metal group; and

~~wherein~~ said electrolyte comprising ~~comprises~~ at least one of:

a salt comprising at least one of halides, trihalides, acetates, sulfates, nitrates, borates, acid salts, chromate, stannate, perchlorate and basic salts of Group I metals, ammonium, Group II metals and Group III metals;

a base comprising at least one of hydroxides of potassium, sodium, lithium and their mixtures; and

an acid ~~preferably~~ comprising at least one of an inorganic and an organic acid; and

~~as well as~~ at least one of zinc, iron, tin, calcium, metal hydrides based on nickel, titanium, rare earth metals and alloys, and

~~wherein~~ said water based fuel being is-disposed in the electrolyte as at least one of powder, granules and coated particles.

37. (Cancelled)

38. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and wherein said hydrogen-fueled locomotion subsystem comprises~~ comprising:

at least one hydrogen-fueled locomotion subsystem comprising a fuel cell and an electrical motor powered thereby; and

at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising:

an electrochemical reactor operative to generate said hydrogen fuel

from water on demand; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle.

39. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and also comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem;

\_\_\_\_\_ at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising:

\_\_\_\_\_ an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle; and

\_\_\_\_\_ a water recycler operative to supply water produced by said at least one locomotion subsystem to said at least one ~~refuelable~~ hydrogen generator.

40-41. (Cancelled)

42. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and wherein said hydrogen generator comprises~~ comprising:

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising:

\_\_\_\_\_ an electrochemical reactor operative to generate said hydrogen fuel from water on demand;

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle; and

\_\_\_\_\_ at least one hydrophobic cathode comprising at least one of a polytetrafluoroethylene ~~Teflon~~ coating, layer and binder.

43. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 42 and wherein said at least one cathode is operative as a hydrogen-generating and as a hydrogen-consuming electrode.

44. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and wherein comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and  
\_\_\_\_\_ at least two hydrogen generators operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, each of said at least two hydrogen generators comprising:

\_\_\_\_\_ an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle, said refueling subsystem being is operative to recharge at least a first one of said at least two ~~refuelable~~ hydrogen generators while at least a second one ~~other refuelable~~ of said at least two hydrogen generators is operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem.

45. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and wherein comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and  
\_\_\_\_\_ at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising:

\_\_\_\_\_ an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided

to said vehicle, said electrical power being is provided by solar cells.

46. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and wherein comprising:~~

at least one hydrogen-fueled locomotion subsystem; and

at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising:

an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle, said electrical power being is provided by regenerative braking.

47-49. (Cancelled)

50. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 49 and wherein said at least one anode comprises comprising:~~

at least one hydrogen-fueled locomotion subsystem; and

at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising:

an electrochemical reactor operative to generate said hydrogen fuel from water on demand;

a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle; and

at least one anode,

said at least one anode being replaceable and comprising at least one of powder, granules and coated particles.

51. (Cancelled)

52. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 51 and wherein comprising:~~

at least one hydrogen-fueled locomotion subsystem; and  
at least one hydrogen generator operative to supply hydrogen fuel to said  
at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen  
generator comprising:

an electrochemical reactor operative to generate said hydrogen fuel  
from water on demand; and

a refueling subsystem enabling at least one of water, electrolyte,  
hydrogen, metal, electrical power and a replacement hydrogen generator to be provided  
to said vehicle,

said electrochemical reactor comprising a slowly consumable anode and  
a quickly consumable electrolyte,

said slowly consumable consumed anode comprising comprises at least  
one of aluminum and aluminum alloy and wherein said electrolyte comprising  
comprises at least one of an alkaline electrolyte based on potassium hydroxide solution  
and a halide electrolyte based on aluminum chloride solution.

53. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 37 and wherein said hydrogen-fueled locomotion system comprises comprising:~~

at least one hydrogen-fueled locomotion subsystem comprising at least  
one electric motor and at least one fuel cell that provides electric power to said at least  
one electric motor; and

at least one hydrogen generator operative to supply hydrogen fuel to said  
at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen  
generator comprising:

an electrochemical reactor operative to generate said hydrogen fuel  
from water on demand; and

a refueling subsystem enabling at least one of water, electrolyte,  
hydrogen, metal, electric power and a replacement hydrogen generator to be provided to  
said vehicle.

54. (Currently Amended) A hydrogen-fueled motor vehicle according to claim 53 and wherein said electrochemical reactor is operative to provide electric power to said at least one electric motor.

55-56. (Cancelled)

57. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein said hydrogen-fueled locomotion subsystem comprises system comprising:~~

at least one hydrogen-fueled motor vehicle including:

a hydrogen-fueled locomotion subsystem comprising a fuel cell and an electrical motor powered thereby; and

a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said at least one vehicle.

58. (Currently Amended) A hydrogen-fueled motor vehicle system ~~according to claim 56 and also comprising:~~

at least one hydrogen-fueled motor vehicle including:

a hydrogen-fueled locomotion subsystem;

a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

a water recycler operative to supply water produced by said locomotion subsystem to said ~~refuelable~~ hydrogen generator; and

a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided

to said at least one vehicle.

59-60. (Cancelled)

61. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein said hydrogen generator comprises system comprising:~~

at least one hydrogen-fueled motor vehicle including:  
a hydrogen-fueled locomotion subsystem; and  
a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising:  
an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and  
at least one hydrophobic cathode comprising at least one of a polytetrafluoroethylene ~~Teflon~~ coating, layer and binder; and  
a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said at least one vehicle.

62. (Currently Amended) A hydrogen-fueled motor vehicle system according to claim 61 and wherein said at least one cathode is operative as a hydrogen-generating and as a hydrogen-consuming electrode.

63. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein system comprising:~~

at least one hydrogen-fueled motor vehicle including:  
a hydrogen-fueled locomotion subsystem; and  
at least two hydrogen generators operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, each of said at least two hydrogen generators comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and  
a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided



to said at least one vehicle,

\_\_\_\_\_ said refueling subsystem ~~being is~~ operative to recharge at least a first one  
of said at least two ~~refuelable~~ hydrogen generators while at least a second one of said at  
least two ~~other-refuelable~~ hydrogen generators is operative to supply hydrogen fuel to  
said hydrogen-fueled locomotion subsystem,

64-65. (Cancelled)

66. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 65 and~~  
~~wherein said at least one anode comprises system comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled motor vehicle including:

\_\_\_\_\_ a hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ a hydrogen generator operative to supply hydrogen fuel to said  
hydrogen-fueled locomotion subsystem, said hydrogen generator comprising:

\_\_\_\_\_ an electrochemical reactor operative to generate said hydrogen fuel  
from water on demand; and

\_\_\_\_\_ at least one anode; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte,  
hydrogen, metal, electrical power and a replacement hydrogen generator to be provided  
to said at least one vehicle,

\_\_\_\_\_ said at least one anode being replaceable and comprising at least one of  
powder, granules and coated particles.

67. (Cancelled)

68. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 67 and~~  
~~wherein system comprising:~~

\_\_\_\_\_ at least one hydrogen-fueled motor vehicle including:

\_\_\_\_\_ a hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ a hydrogen generator operative to supply hydrogen fuel to said  
hydrogen-fueled locomotion subsystem, said hydrogen generator comprising an  
electrochemical reactor operative to generate said hydrogen fuel from water on demand;

and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electric power and a replacement hydrogen generator to be provided to said at least one vehicle,

\_\_\_\_\_ said electrochemical reactor comprising a slowly consumable anode and a quickly consumable electrolyte,

\_\_\_\_\_ said slowly consumable ~~consumed~~ anode comprising ~~comprises~~ at least one of aluminum and aluminum alloy, and wherein

\_\_\_\_\_ said quickly consumable electrolyte comprising ~~comprises~~ at least one of an alkaline electrolyte based on potassium hydroxide solution and a halide electrolyte based on aluminum chloride solution.

69. (Cancelled)

70. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein said hydrogen-fueled locomotion system comprises system~~ comprising:

\_\_\_\_\_ at least one hydrogen-fueled motor vehicle including:

\_\_\_\_\_ a hydrogen-fueled locomotion subsystem comprising at least one electric motor and at least one fuel cell that ~~provides~~ ~~provided~~ electric power to said at least one electric motor; and

\_\_\_\_\_ a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electric power and a replacement hydrogen generator to be provided to said at least one vehicle.

71. (Currently Amended) A hydrogen-fueled motor vehicle system according to claim 70 and wherein said electrochemical reactor is operative to provide electric power to said at least one electric motor.

72. (Cancelled)

73. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein system comprising:~~

at least one hydrogen-fueled motor vehicle including:  
a hydrogen-fueled locomotion subsystem; and  
a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand;  
and  
a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said at least one vehicle,  
said electrical power being is provided by solar cells.

74. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein system comprising:~~

at least one hydrogen-fueled motor vehicle including:  
a hydrogen-fueled locomotion subsystem; and  
a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand;  
and  
a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said at least one vehicle,  
said electrical power being is provided by regenerative braking.

75. (Currently Amended) A hydrogen-fueled motor vehicle ~~according to claim 56 and wherein system comprising:~~

at least one hydrogen-fueled motor vehicle including:  
a hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ a hydrogen generator operative to supply hydrogen fuel to said hydrogen-fueled locomotion subsystem, said hydrogen generator comprising at least two electrochemical reactors operative to generate said hydrogen fuel from water on demand; and

\_\_\_\_\_ a refueling subsystem enabling at least one of water, electrolyte, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said at least one vehicle,

\_\_\_\_\_ said electrical power ~~being is~~ provided to at least a first one of said at least two electrochemical reactors while at least a second one ~~another~~ of said at least two electrochemical reactors is generating hydrogen.

76. (Cancelled)

77. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 76 and wherein said hydrogen fueled locomotion subsystem comprises;~~comprising

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem comprising a fuel cell, and an electrical motor powered thereby; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand, the method comprising:

\_\_\_\_\_ supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said electrochemical reactor.

78. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 76 and also comprising~~

\_\_\_\_\_ at least one hydrogen-fueled locomotion subsystem; and

\_\_\_\_\_ at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand, the method comprising:

supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said electrochemical reactor; and  
recycling water produced by said at least one locomotion subsystem to said at least one refuelable hydrogen generator.

79-80. (Cancelled)

81. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle according to claim 76 and ~~wherein comprising~~

at least one hydrogen-fueled locomotion subsystem; and  
at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand, said electrochemical reactor comprising ~~comprises~~ an anode and a cathode, the method comprising:

supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said electrochemical reactor, and ~~wherein~~ said supplying comprising ~~comprises~~:

providing an electrical connection between said anode and said cathode ~~of the hydrogen generator~~; and

providing hydrogen gas to said cathode.

82. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle according to claim 76 and ~~wherein comprising~~

at least one hydrogen-fueled locomotion subsystem; and  
at least one refuelable hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem on demand, said at least one refuelable hydrogen generator comprising at least two electrochemical reactors operative to generate said hydrogen fuel from water on demand, each of said at least one two electrochemical reactors comprising ~~comprises~~ an anode and a cathode, the method comprising:

supplying at least one of water, electrolyte, hydrogen, a metal containing

material and electrical power to at least a first one of said at least two electrochemical reactors, and wherein said supplying comprising comprises:

providing an electrical connection between said anode and said cathode of said at least first one of said at least two electrochemical reactors; and

providing hydrogen gas to said cathode of said at least first one of said at least two electrochemical reactors while at least a second one another of said at least two electrochemical reactors generates hydrogen.

83. (Cancelled)

84. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle according to ~~claim 83 and wherein said providing hydrogen-fueled locomotion subsystem comprises providing,~~ the method comprising:

providing at least one hydrogen-fueled locomotion subsystem including a fuel cell and providing an electrical motor powered thereby;

providing at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said providing at least one hydrogen generator comprising providing an electrochemical reactor operative to generate said hydrogen fuel from water on demand;

providing a refueling subsystem enabling at least one of water, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle; and

supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power from said refueling subsystem to said electrochemical reactor.

85. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle according to ~~claim 83 and also,~~ the method comprising:

providing at least one hydrogen-fueled locomotion subsystem;

providing at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said providing at least one hydrogen generator comprising providing an electrochemical reactor operative to

generate said hydrogen fuel from water on demand;

\_\_\_\_\_ providing a refueling subsystem enabling at least one of water, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle;

\_\_\_\_\_ supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power from said refueling subsystem to said electrochemical reactor; and

recycling water produced by said at least one locomotion subsystem to said at least one ~~refuelable~~ hydrogen generator.

86-87. (Cancelled)

88. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 83 and wherein,~~ the method comprising:

\_\_\_\_\_ providing at least one hydrogen-fueled locomotion subsystem;

\_\_\_\_\_ providing at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said providing at least one hydrogen generator comprising providing an electrochemical reactor operative to generate said hydrogen fuel from water on demand, said electrochemical reactor comprising ~~comprises~~ an anode and a cathode;

\_\_\_\_\_ providing a refueling subsystem enabling at least one of water, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle; and

\_\_\_\_\_ supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power from said refueling subsystem to said electrochemical reactor, and wherein said supplying comprising ~~comprises~~:

providing an electrical connection between said anode and said cathode of ~~the~~ said at least one hydrogen generator; and

providing hydrogen gas to said cathode.

89. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 83 and wherein,~~ the method comprising:

providing at least one hydrogen-fueled locomotion subsystem;  
providing at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said providing at least one hydrogen generator comprising providing at least two electrochemical reactors operative to generate said hydrogen fuel from water on demand, each of said at least two ~~one~~ electrochemical reactors comprising ~~comprises~~ an anode and a cathode;  
providing a refueling subsystem enabling at least one of water, hydrogen, metal, electrical power and a replacement hydrogen generator to be provided to said vehicle; and  
supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power from said refueling subsystem to at least a first one of said at least two electrochemical reactors, and ~~wherein~~ said supplying comprising ~~comprises~~:  
     providing an electrical connection between said anode and said cathode of said at least first one of said at least two electrochemical reactors; and  
     providing hydrogen gas to said cathode of said at least first one of said at least two electrochemical reactors while at least a second one ~~another~~ of said at least two electrochemical reactors generates hydrogen.

90. (Cancelled)

91. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 90 and wherein said providing hydrogen-fueled locomotion subsystem comprises providing system comprising:~~

providing at least one hydrogen-fueled motor vehicle including at least one hydrogen-fueled locomotion subsystem including a fuel cell and ~~providing~~ an electrical motor powered thereby and at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand; and

supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said electrochemical reactor.



92. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 90 and also~~ system comprising:

providing at least one hydrogen-fueled motor vehicle including at least one hydrogen-fueled locomotion subsystem and at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand;

supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said electrochemical reactor; and

recycling water produced by said at least one locomotion subsystem to said at least one ~~refuelable~~ hydrogen generator.

93-94. (Cancelled)

95. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 90 and wherein~~ system comprising:

providing at least one hydrogen-fueled motor vehicle including at least one hydrogen-fueled locomotion subsystem and at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising an electrochemical reactor operative to generate said hydrogen fuel from water on demand, said electrochemical reactor comprising ~~comprises~~ an anode and a cathode; and

supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to said electrochemical reactor, ~~and wherein~~ said supplying comprising ~~comprises~~:

providing an electrical connection between said anode and said cathode ~~of the hydrogen generator~~; and

providing hydrogen gas to said cathode.

96. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle ~~according to claim 90 and wherein~~ system comprising:

providing at least one hydrogen-fueled motor vehicle including at least

one hydrogen-fueled locomotion subsystem and at least one hydrogen generator operative to supply hydrogen fuel to said at least one hydrogen-fueled locomotion subsystem, said at least one hydrogen generator comprising at least two electrochemical reactors operative to generate said hydrogen fuel from water on demand, each of said at least two ~~one~~ electrochemical reactors comprising ~~comprises~~ an anode and a cathode; and

\_\_\_\_\_ supplying at least one of water, electrolyte, hydrogen, a metal containing material and electrical power to at least a first one of said two electrochemical reactors, and wherein said supplying comprising ~~comprises~~:

providing an electrical connection between said anode and said cathode of said at least first one of said at least two electrochemical reactors; and

providing hydrogen gas to said cathode of said at least first one of said at least two electrochemical reactors while at least a second one ~~another~~ of said at least two electrochemical reactors generates hydrogen.

97. (Currently Amended) A method for recharging a hydrogen-fueled motor vehicle comprising:

providing a chemical reactor comprising a container containing at least one anode, at least one cathode, an electrolyte[[,]] and water based fuel;

wherein said at least one anode comprises an electrical conductor and is in direct electrical contact with said water based fuel; and

wherein said at least one cathode comprises an electrical conductor and is coated with a catalyst based on at least one of a metal and metal oxide belonging to at least one of the platinum metal group and the transition metal group; and

wherein said electrolyte comprises at least one of:

a salt comprising at least one of halides, trihalides, acetates, sulfates, nitrates, borates, acid salts, chromate, stannate, perchlorate and basic salts of Group I metals, ammonium, Group II metals and Group III metals;

a base comprising at least one of hydroxides of potassium, sodium, lithium and their mixtures; and

an acid ~~preferably~~ comprising at least one of an inorganic and an organic acid; and

~~as well as~~ at least one of zinc, iron, tin, calcium, metal hydrides based on nickel, titanium, rare earth metals and alloys;

and wherein said water based fuel is disposed in the electrolyte as at least one of powder, granules and coated particles,

the method further comprising:

draining depleted water based fuel;

supplying recharged water based fuel; and

supplying said electrolyte.

98. (Currently Amended) A method for recharging a water based fuel comprising:

providing a DC power supply;

providing ~~an~~ at least one inert cathode connected to a negative terminal of said DC power supply;

providing at least one inert anode connected to a positive terminal of said DC power supply;

providing at least one motor operative to rotate a scraper paddle operative to scrape deposited materials off the surface of said at least one cathode;

supplying depleted water based fuel comprising:

at least one of iron, tin, zinc, cadmium, lead, metal hydrides based on nickel, titanium, rare earth metals, and alloys thereof disposed as at least one of powder, granules and coated particles;

supplying an electrolyte comprising at least one of:

a salt selected from a group consisting of halides, trihalides, acetates, sulfates, nitrates, borates, acid salts, chromate, stannate, perchlorate and basic salts of Group I metals, ammonium, Group II metals and Group III metals;

a base, comprising hydroxides at least one of potassium, sodium, lithium and their mixtures; and

an acid ~~preferably~~ comprising at least one of an inorganic and an organic acid;

at least one of solubilizing and dispersing said depleted water based fuel;

applying DC power between said at least one anode and said at least one cathode; and

operating said at least one motor to propel said scraper paddle to scrape ~~the~~ said deposited materials ~~deposits~~ off the surface of ~~the~~ said at least one cathode.

99. (Currently Amended) A method for recharging a water based fuel comprising:

providing a container filled with ~~said~~ an electrolyte, said electrolyte including at least one of: a salt selected from a group consisting of halides, trihalides, acetates, sulfates, nitrates, borates, acid salts, chromate, stannate, perchlorate and basic salts of Group I metals, ammonium, Group II metals and Group III metals; a base comprising at least one of hydroxides of potassium, sodium, lithium and their mixtures thereof; and an acid comprising at least one of an inorganic acid and an organic acid;

providing a chamber formed inside said container;

providing at least one hydrophobic gas diffusion, hydrogen consuming, cathode, formed as at least one of the walls of said chamber;

providing at least one current collector electrically connected to said at least one cathode;

providing a porous, electrically insulating separator between said at least one cathode and ~~said~~ an anode;

supplying said electrolyte; ~~comprising:~~

~~\_\_\_\_\_ at least one of:~~

~~\_\_\_\_\_ a salt selected from a group consisting of halides, trihalides, acetates, sulfates, nitrates, borates, acid salts, chromate, stannate, perchlorate and basic salts of Group I metals, ammonium, Group II metals and Group III metals;~~

~~\_\_\_\_\_ a base comprising at least one of hydroxides of potassium, sodium, lithium and their mixtures thereof; and~~

~~\_\_\_\_\_ an acid comprising at least one of an inorganic acid such as sulfuric acid and an organic acid such as citric acid;~~

supplying depleted water based fuel comprising at least one of zinc, iron, tin, cadmium, lead, metal hydrides based on at least one of nickel and titanium and rare earth metals and alloys thereof disposed in said electrolyte as at least one of powder, granules and coated particles;

supplying hydrogen gas to said chamber.